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(54) Title: PREPARATION OF ACRYLIC POLYMER SOL FOR COATING

(57) Abstract: Disclosed are acrylic polymer beads and an acrylic sol composition containing the acrylic polymer beads that are used for automobile underbody floor, wheel housing, fuel tank, body panel junction and hood, door, or the like for the purpose of water tightness, vibration isolation, and anticorrosion. More specifically, the acrylic polymer beads having a core/shell structure, which are prepared by using a part of the monomer constituting a core layer to form seeds by a seed polymerization, polymerizing the rest of the monomer to form a core layer and then forming a shell layer containing an appropriate amount of a crosslink agent, have a narrow particle size distribution and thereby provide, when used in addition to a plasticizer and a filler in the preparation of an acrylic sol composition for automobile, high storage stability of the acrylic sol and excellent properties of the coating formed by gelation of the acrylic sol.

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**WO 2004/009649 A1**

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/KR 03/01418-0

## CLASSIFICATION OF SUBJECT MATTER

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According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC<sup>7</sup>: C08F 2/22; C08F 2/24; C08F 265/06

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EPODOC, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5668209 A (RUCH K. et al.) 16 September 1997 (16.09.97) column 3, line 3 - column 4, line 60; example 1, claims.	1-14
Y	US 4210 567 A (KÖSTERS B.) 1 July 1980 (01.07.80) figure; column 3, line 54 - column 7, line 18; claims.	1-14
Y	US 4199486 A (BOESSLER H. et al.) 22 April 1980 (22.04.80) column 1, line 65 - column 6, line 2; claims.	1-14
Y	GB 1516510 A (TEROSON GMBH) 5 July 1978 (05.07.78) page 3, line 1 - page 5, line 59; claims; figure.	1-14
Y	US 4071653 A (BOESSLER H. et al.) 31 January 1978 (31.01.78) column 4, line 28 - column 8, line 2; claims.	1-14

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 56 116759 A (DAICEL CHEM IND LTD), 12 September 1981 (12.09.81) [abstract][online][retrieved on 2003-10-09] retrieved from EPO PAJ database <i>abstract.</i>	1,2,5
Y	JP 06 271677 A (NIPPON GOSEI GOMU KK), 27 September 1994 (27.09.94) (abstract) World Patents Index [online] [retrieved on 2003-10-09]retrieved from EPO WPI database, DW199443, AN.: 1994-347207 [43]. <i>abstract.</i>	1,2,5

# INTERNATIONAL SEARCH REPORT

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Patent document cited in search report			Publication date		Patent family member(s)		Publication date	
GB	A	1516510			PL	B	106055B	1979-11-30
					HU	B	177765	1981-12-28
					ES	A	442631	1977-04-16
					IT	B	1054391	1981-11-10
					RO	A	70308	1982-05-10
					NL	A	7513337	1976-05-18
JP	A	6271677A			none			
		2						
JP	A	56116759			none			
		A2						
US	A	4071653	1978-01-31		IT	B	1074269	1985-04-20
					GB	A	1513994	1978-06-14
					FR	A	2326435	1977-04-29
					SE	A	7610876	1977-03-31
					SE	B	423239	1982-04-26
US	A	4199486	1980-04-22		IT	B	1107884	1985-12-02
					NL	A	7805388	1978-11-22
					GB	A	1581493	1980-12-17
					FR	A	2391245	1978-12-15
					SE	A	7805769	1979-02-05
US	A	4210567			none			
US	A	5668209			none			